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DIRECTION AND PLANNING OF SCIENTIFIC WORK IN THE USSR,
FROM A STUDY TOUR MADE BY HUNGARIANS

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FOREWORD

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DIRECTION AND PLANNING OF SCIENTIFIC WORK IN THE USSR,
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Following is the translation of an article by Lajos Szántó in Magyar Tudomány, Vol 5, No 1, Budapest, January 1961, pages 51-55.

The preparation of the long-range research plan and the development of the administration and coordination of scientific research work, gives reason for the study and use of the experiences of other nations in this field, especially the USSR. For this reason the Council of Science and Higher Education in the past year sent a delegation to the USSR to study the planning and coordination of scientific research work. The delegation visited many universities and academic institutes and discussed problems with many leaders of scientific and cultural life.

The purpose of the present report is to inform you and to draw attention to similar problems in Hungary based on our experience.

I.

The purpose of the study tour was to get acquainted with the organization and planning of research work in higher educational institutions of the USSR. The organized and directed research work of these institutions represents a good part of the research capacity of the country. They do basic research, but practical problems originated from the development of communism are emphasized more. The universities and schools of the Soviet Union (excluding agricultural and medical schools) handled about 30 thousand research problems in 1959.

The main directorate of the research work of these institutions is the STC (Scientific Technical Committee) of the Soviet Union's Ministry of Higher Education. The STC was established by the Council of Ministers USSR on 12 April 1956; its head is the second secretary /deputy minister?/ of the Ministry of Higher Education, who is the chairman of the STC.

[Note: STC used here is rendered TTB in Hungarian and NTK in Russian.]

The main functions of the STC are to follow the development of science inside and outside the country; to direct the planning of research work; to keep track of possible practical application of the results; to examine and give opinion on the yearly research plans of universities; to check those of the national economic plan

and coordinate them with the Planning Commission, the Soviet Academy of Sciences, and the State Scientific Technical Committee of the Soviet Union (GNTK); to study the organization of scientific work, and to prepare directives concerning this work; to direct the work of the state [republic?] STCs, the scientific committees of universities and the international scientific program; to supervise university publications and the work of student scientific groups; to approve exhibitions of scientific results, awards, and prizes; etc.

The members of the STC are members of universities and scientific institutions, and specialists of governmental departments and other administrative organizations. Representatives of the Soviet Academy of Sciences, the GNTK, and the Central Planning Commission are also members of the STC, in order to coordinate the research work of different institutions.

The STC is divided into sections according to scientific fields. It had 29 sections in 1959, and each section had about 30 members. There are many representatives of the universities in the sections.

At the higher educational institutions of the Soviet Union the planning of research work is well organized, done mainly by the STC.

Research work of the universities is divided into two groups according to the financial support:

- a. Research work sponsored by the government;
- b. Research work under contract with industry and financed by industry.

Typical example: At the University of Moscow Imeni Lomonosov in 1959 the government spent 12 million rubles for research and industry spent 41 million rubles.

Basic research projects are mainly financed by the government. Scientists of universities carry out their research tasks in addition to their educational jobs. The official working time is 6 hours per day at universities; 1/3 of this can be spent on research work. Under industrial contracts the universities work mainly on practical problems originating from the development of communism. These projects are well selected; besides their practical importance they require theoretical research work as well. For example, the Energetics Institute in Moscow handled industry-sponsored research projects worth 20 million rubles; among others they worked on energy transmission problems of the Kuybishev and Volga power plants. A large part of the expenses are for wages, which are distributed among those involved in a set manner above their normal salaries.

The strong connection between universities and industrial plants is ensured institutionally by the contract system. During past years industry has handed laboratories over to universities and industrial plants have employed scientists at universities on their own payrolls. In very recent years the problem laboratory system was established, which concentrates the research capacity of separate departments to solve important scientific and technical problems. Such laboratories are the Thermophysical Laboratory, the Industrial Processes Automation Laboratory, etc., at the State

Energy /Energetics?/ Institute. There is another form of organized research in which the scientists of universities work together with an institute of the Soviet Academy of Sciences on a common project. The Soviet Academy of Sciences does not sponsor research projects, but for short or longer time it employs scientists of universities.

The universities prepare yearly research plans, but in addition they also have their five-year (seven-year at present) research plans. The planning always considers the problems of development and practice.

The yearly research plans consist of seven parts: a) problems exceptionally important for the development of Sciences, first supported and financed by the federal budget; b) complete research plans of departments of universities; c) projects under industrial contract; d) plans for expeditions; e) plans for the use of scientific results; f) plans for meetings and programs; and g) plans for publications.

The preparation of the yearly plans starts at the university level and progresses upward. Every university department prepares its own plan, which the scientific committee of the department discusses. Similarly, the combined plan of the university is discussed by the scientific committee of the university and then presented by the Chairman to the STC of the Ministry of Higher Education of the state. The research themes of a given university are sub-divided according to the departments of the university.

The STC of the state coordinates and criticizes the research plans of the universities. They approve plans only for exempted projects and industrial contracts, and also the main expenditures of the plans.

The administrative organizations have the right to modify the plans of the universities, and they very often do so. Even the universities modify their own plans later, if it seems advantageous, and ask for additional acceptance.

The universities start to prepare their yearly research plans in the preceding September or October. In the case of industrial projects they discuss the plans with the customer. After approval of the university committees, the completed research plans have to be handed in to the state STC in the beginning of December, and they are returned after approval by the STC before the 15th of January. Before approval, the plans are sent to the larger industrial plants for information, and their opinion is considered.

The inspecting of the plan is also organized. One method is for the university departments to hold a conference at the beginning of every year at which they give a report on their research; these reports are usually published. The scientific committees of the schools also systematically discuss the research projects of the school. The universities also have to send progress reports to the state STC every six months.

The inspection of projects under industrial contract is even more organized. During the work the university sends progress reports at certain predetermined intervals to the customer, too. After completion of the project, the university gives a final report

on the project and it also gives every document to the industrial plant. If it is justified they will send specialists to install the new system.

Another purpose of the study tour was to get acquainted with the organization and planning of research work in the institutes of the Soviet Academy of Sciences. These institutes work on research projects which are exceptionally important for the development of science. The selection of the most important research projects is their main goal. In past years they established 120 main problems, on every one of which committees selected from the best scientists are working. From the 120 so far about 100 have been worked out, some of them already published. Based on the experience of past years they modified even this process.

In order to concentrate on the most important task they divided the 120 main problems into 60 main directions, in which 30 were emphasized as the main directions of Soviet science. The 1958 and 1959 annual meetings of the Academy approved these 30 directions as the main tasks facing Soviet science, and the preparation of research plans at the Academy and at other research institutes is based on these directions.

The Presidium of the Soviet Academy of Sciences strives for the best possible cooperation in research. Within the range of the Academy works a coordination committee under President A. N. Nesmeyanov. Members of the committee are the representatives of the Soviet Academy of Sciences, the Republic Academies, special Academies, and the Ministry of Higher Education. At the meetings of the coordination committee the basic questions of Soviet science, the reports of the republic Academies, and the development of the most important research work are discussed. The republic Academies have a very important position in the coordination if the main basis of the research is in their territory. (For example, the Academies of Kazakstan and Uzbekistan coordinate alkaloid and cotton research.)

In the institutes of the Academy, as in the universities, they prepare yearly and seven-year plans. The three main parts of the institute's research plans are: a) problem plans (containing the main research tasks); b) thematic plans (summarizing the research themes of the departments and laboratories); and c) schedule plans (containing the financial, instrumental, and manpower needs of the research projects).

The institutions start to prepare the yearly plans in the preceding September. They discuss their plans and send them to other institutions involved in similar work for criticism.

The thematic plans have to be approved by the scientific committee of the institution, the problem plans have to be approved by the competent department of the Academy.

The yearly plan of the Academy contains the summarized problem plans of the institutions. This is discussed by the Presidium

of the Soviet Academy of Sciences before it is submitted to the Council of Ministers for approval. It is also submitted to the Central Planning Commission, the Ministry of Higher Education, and the GNTK.

The institutions prepare yearly reports on their work for the competent departments of the Academy. After completion of a research project the institute prepares a final report, which is published.

The departments use the reports of the institutes for various purposes. They measure through these reports the scientific, administrative and material conditions of the institute; and they also use them for the preparation of the chairman's address at the annual meeting.

The main tasks of the Soviet Academy of Sciences in the next few years are further concentration of research in the selected main directions, reduction of the number of main problems, and correction of the work of those institutes which do not reach the required level if necessary, handing them over to other administrative organizations.

The third purpose of the study tour was to get acquainted with the organization of research work for technical development. Our knowledge about this problem was very poor.

The industrial development of the Soviet Union is the task of the State Scientific Technical Committee (GNTK), which operates jointly with the Council of Ministers. The GNTK is a federal all-union organization which was established in 1957 by the Presidium of the Supreme Soviet. The main tasks of the Committee are the study of the development of science inside and outside the country, the publication of these developments, coordination of the work of the republics in the development and application of new techniques, the supervision of their introduction into the national economy, and the publication of technical literature.

Also, the task of the GNTK is the organization and expansion of scientific cooperation in the technical fields with other countries.

The Committee's work is helped by the scientific technical committees of the republics, which operate jointly with the Councils of Ministers of the republics, the republic economic committees, the departments and administrative organizations of the USSR government, industrial plants, research and design institutes, and scientific-technical societies.

The work of the Committee consists in studying the development of technical sciences, publicizing new developments, preparing proposals for the solution of complex technical problems, working on the improvement of the organization of experimental and research work, criticizing the technical development plans, making suggestions for the use and production of new modern machinery and instruments, or suggesting the stopping of production of obsolete products, organizing scientific cooperation with other countries in technical fields, preparing the drafts of international pacts in these fields, and

sending representatives to international conferences and meetings.

The GNTK prepares the seven-year plan for the development of the national economy and the yearly plans for the application of new techniques. The members of the GNTK are the chairman, appointed by the Presidium of the Supreme Soviet; the deputy chairman, and the members, appointed by the Council of Ministers. The work of the committee is directed by the chairman. To fulfill its function the GNTK employs technical and special committees. (In 1959 it employed 160 different committees.)

There are research institutes directly under the GNTK; and also the GNTK influences the work of research institutes under other administrative organizations through its directing function. One of its main institutes is the Information Institute which is under the joint jurisdiction of the Soviet Academy of Sciences and the GNTK.

The GNTK's responsibilities are the publication of periodicals (at present it publishes 40 of them) and the organization of exhibitions for the demonstration of the new products of the national economy (in 1959 it organized 66 exhibitions).

It starts to prepare the yearly plan of the new technical developments in the preceding spring. The planning starts with the estimate of the machinery needs of industry. The next step is to prepare a proposal for the abolition of obsolete machinery. In 1959 the GNTK stopped the production of 666 different machines and started the production of 800 new machines. This was possible because, in the previous few years, about 1600-1700 new machine types were developed.

The plans prepared by the GNTK are discussed with the institutions concerned before approval. One method of coordination is for the representatives of the Soviet Academy of Sciences to be present in the committees of the GNTK, and these scientists systematically inform the GNTK of the present research projects and of those new developments, the application of which would be profitable for the national economy. The republic GNTK organizations similarly discuss their plans with the STC of the Ministries of Higher Education of the republics and consider the new developments of the universities' research work. The GNTK has connections with CEMA (Committee of Economic Mutual Aid) through their members in the committees of the other organization.

II.

One of the conclusions of the study tour is that the scientific research planning system introduced in the Soviet Union in 1956 is satisfactory. The planning of scientific work is not administrative, bureaucratic planning; it is the selection of the main tasks according to the needs of the national economy and the development of science. If there were some changes concerning this question, they were for the improvement of the system and they did not change the planning principles.

The conclusion is that similar principles and methods in our

aim to prepare a long-range research plan should be correct in our case also, and our further work should be based on this plan.

It is worth-while to note in the organization, direction, and supervision of scientific work the Soviet Union does not use rigid bureaucratic methods. One principle, for example, is that they don't think the organization of scientific work unchangeable but, according to varying needs, they try to establish the best organizations.

This reminds us that the organization of our research institutes and the management of the institutes are not the only possible ones. During the preparation and approval of the long-range research plan we have to keep this question in mind, because some changes in our research institutes may improve their work.

During the study tour we collected most of the new experiences in the research work of the universities. The principles of the 1956 decision became real in practice; for the purpose of scientific work the facilities of the universities are used as much as possible. The connection between education and scientific work developed in such a way that it helps raise the educational level and it also serves the necessary and fruitful interests of the national economy.

Comparing our work with the Soviet Union's work we have to make most of our conclusions about the scientific research work of the universities. We are convinced that one of our main tasks should be the better use of the facilities of the universities in scientific research work, for the interest of both education and scientific work. The responsibility of directing the research work of the universities should be assigned to the TFT (Council of Science and Higher Education) of the Hungarian Academy of Science, and the Ministry of Culture. This direction should be such that: a) it satisfies the general needs of scientific research work; b) it serves the improvement of the education; and c) it improves -- according to the needs of the national economy -- the relationship between industry and the universities.

In the course of the study tour we tried to gain experience in the planning of the financial needs of scientific work. We were especially interested in this problem, because it was widely discussed during the preparation of the long-range research plan. We found that in the Soviet Union that agreement between the previously-planned budget and the effective expenditures of a research project has no primary importance, with the exception of projects under contract with industrial plants. The intellectual and material resources for scientific research in the Soviet Union are almost without limit; our situation in this respect today is quite different.

We can draw the conclusion that the main goal in the planning of scientific research is the correct selection of the main tasks and, according to this, the best distribution of material and manpower to ensure the best possible results.

Our experiences with the work of the GNTK was also beneficial. The GNTK is the most important organization in directing the

technical development of the Soviet national economy and similarly important in the determination of the main tasks of scientific research. Our belief is that the establishment of an organization similar to the GNTK in Hungary would be a very important and fruitful step for the development of our national economy, for the installation of modern technology in our industry, and for the improvement of cooperation between science and practice.